

Claims

What is claimed is:

- 5 1. A plasma treatment method comprising the step of situating a dielectric liquid having gas bubbles therein within an electric field which generates plasma within the gas bubbles.
- 10 2. The plasma treatment method of claim 1 wherein the electric field is generated by spaced electrodes which are stimulated at a voltage and frequency sufficient to generate plasma within the gas bubbles.
3. The plasma treatment method of claim 2 wherein the dielectric liquid is situated between the spaced electrodes.
- 15 4. The plasma treatment method of claim 2 wherein the dielectric liquid is situated adjacent the spaced electrodes.
5. The plasma treatment method of claim 1 wherein the gas bubbles contain the dielectric liquid in vaporized form.
- 20 6. The plasma treatment method of claim 1 wherein the dielectric liquid is a hydrocarbon liquid.
7. The plasma treatment method of claim 1 further comprising the step of increasing the temperature of the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
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8. The plasma treatment method of claim 1 further comprising the step of reducing the pressure of the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
- 5 9. The plasma treatment method of claim 1 further comprising the step of ultrasonically exciting the dielectric liquid.
- 10 10. The plasma treatment method of claim 1 further comprising the step of ultrasonically exciting the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
11. The plasma treatment method of claim 1 further comprising the step of providing the dielectric liquid to the combustion chamber of an internal combustion engine.
- 15 12. The plasma treatment method of claim 1 wherein:
- a. the electric field is provided about a fuel line containing the dielectric liquid, and
 - b. the fuel line provides the dielectric liquid to a combustion chamber of an internal combustion engine.
- 20 13. A plasma treatment method comprising the steps of:
- a. situating a dielectric liquid between opposing electrodes, the dielectric liquid having gas bubbles therein;
 - b. stimulating the electrodes at a voltage and frequency sufficient to generate plasma within the gas bubbles.
- 25 14. The plasma treatment method of claim 13 wherein the gas bubbles contain the dielectric liquid in vaporized form.

15. The plasma treatment method of claim 13 wherein the dielectric liquid is a hydrocarbon liquid.
- 5 16. The plasma treatment method of claim 13 further comprising the step of increasing the temperature of the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
- 10 17. The plasma treatment method of claim 13 further comprising the step of reducing the pressure of the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
- 15 18. The plasma treatment method of claim 13 further comprising the step of ultrasonically exciting the dielectric liquid.
- 20 19. The plasma treatment method of claim 13 further comprising the step of ultrasonically exciting the dielectric liquid to a degree sufficient to cause the gas bubbles to form in the dielectric liquid.
- 20 20. The plasma treatment method of claim 13 further comprising the step of providing the dielectric liquid to the combustion chamber of an internal combustion engine.
- 25 21. The plasma treatment method of claim 13 wherein:
a. the electrodes are provided about a fuel line containing the dielectric liquid, and
b. the fuel line provides the dielectric liquid to a combustion chamber of an internal combustion engine.